CLAIMS

1. A cyclonic separation apparatus comprising a cylindrical vortex-starting chamber and frusto-conical cyclonic separation chamber characterised in that the separation chamber is formed from a first frusto-conical region and a second frusto-conical region and the first region has a larger cone-angle than that of the second region for the purpose of reducing the overall axial length of the cyclone separation chamber.

2. Separation apparatus as claimed in claim 1 further comprising a central tubular member which extends axially of the cylindrical chamber and comprises a vortex starter and the wider end of the first frusto conical region begins in the region of the downstream end of the central tubular member.

3. Separation apparatus as claimed in claim 2 wherein the wall of the downstream end of the central tubular member is apertured and the frusto-conical wall of the first region, which is close to the apertured lower end of the central tubular member, in use forces a progressive reduction in radius on the circulating airstream and therefore a corresponding increase in its rotational velocity in the region of the apertures and just before the airstream enters the second frusto-conical cyclone section, for the purpose of retianing more higher density particulate material in the rotating airstream as it transfers to the second cyclone region than if no such first frusto-conical region is employed, so as to reduce the chance of higher density material migrating radially inwardly to exit via the apertures in the tubular member instead of remaining in the rotating airstream and moving therewith into the second frusto-conical separation region.

4. Separation apparatus as claimed in any of claims 1 to 3 wherein the cone-angle of the first region is in the range 40° to 80° and that of the second region is in the range 16° to 28°.

5. Separation apparatus as claimed in claim 4 wherein the two cone angles are 68° and 20° respectively.

6. Separation apparatus as claimed in claim 4 wherein the two cone angles are 64° and 24° respectively.

7. Separation apparatus as claimed in any of claims 1 to 6 further comprising a particle and/or liquid collecting bin downstream of the second separation region, wherein reduction in overall axial length of the cyclone separation chamber causes the latter to protrude to a lesser extend into the collecting bin than if a single frusto-conical region were employed having the same cone angle as the second region and the same entrance diameter as the cylindrical vortex-starting chamber, thereby increasing the available storage volume of the bin.

8. Separation apparatus as claimed in any of claims 1 to 7 when used to separate dry particulate material from air and for collecting the particulate material in the bin.

9. Separation apparatus as claimed in any of claims 1 to 7 when used to separate liquid from air, and for collecting liquid in the bin.